VERIFICATION OF TRANSLATION

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declare that I am well acquainted with both the French and English languages, and that the attached is an accurate translation, to the best of my knowledge and ability, of the International Application No. PCT/FR2004/002216, filed September 1, 2004.

I further declare that all statements made herein of my knowledge are true and that all statements made on information and belief are believed to be true; and, further, that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the above-captioned application or any trademark issued thereon.

Signature  Date 06/06/2006

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CROSS-COUNTRY SKI PROVIDED WITH A DIRECT SUPPORT LATERAL SURFACE

The invention relates to the field of cross-country skiing.

For a long time, cross-country skis have been used with rudimentary devices for binding the boot to the ski. The boot sole had, for example, a tongue or a binding strap extending beyond the front end of the boot and blocked in a lock arranged forward from the position of the boot with respect to the ski.

One has realized that this type of bindings had two major drawbacks. During the practice of the conventional diagonal step technique, one has noticed that these systems necessitated a forward rotational movement of the boot with respect to the ski that was located far ahead of the foot. The result was a movement of the foot that was not natural, far from the foot rolling movement that can be observed when walking. During the practice of the skating step, these systems also had the drawback of providing only a very poor lateral guidance of the boot with respect to the ski.

In order to remedy these problems, systems for binding the boot to the ski, whereby the boot was articulated on the ski about an axis arranged right behind the front end of the sole, were introduced in the 1980s. These systems had at least part of the binding device arranged under the boot sole. This enabled the boot pivot point to be moved back with respect to the ski and to rigidify the torsional strength of the boot/binding assembly during the practice of the skating step.

The device described in the document FR-2.739.788 shows that the articulation axis of the boot as well as the elastic return means, which tend to flatten the boot against the ski, are located under the sole.

Other devices, which are described, for example, in the documents FR-2.742.060, FR-2.782.652, WO-01/96963, WO-02/05907, or WO-02/087710, confirm that the trend is to seek a positioning of the binding device that is as much under the boot sole as possible, and no longer mainly at the front of the latter.

However, many of these systems have the drawback of being inserted between the boot and the ski, and of particularly raising the position of the boot with respect to the ski. The foremost consequence of this is not allowing for a direct support of the boot on the ski, which can negatively affect a good support

on the ski edges, especially for the practice of the skating step. In addition, in the known systems, the support of the boot on the ski does not occur directly on the ski, but rather generally by means of a baseplate which covers more or less the entire width of the ski upper surface, such as shown, for example, in the document EP-878.218. The presence of such a baseplate increases the height of the boot position and has a tendency to also distribute the pressure over the width of the ski whereas, during edge setting, one wishes instead to concentrate a maximum of the ski pressure on one of the edges, generally the inner edge.
An object of the invention is therefore to provide a cross-country ski provided with means for better transmission of the supports on the ski edges, as well as optimal stability.

To this end, the invention proposes a cross-country ski having a binding zone adapted to receive a device for binding a boot to a ski, wherein the binding zone includes a location for receiving the binding device, and an upper support surface of the ski that is arranged on at least one side of the location for receiving the binding device and on which the boot can possibly come in direct contact when the user applies a pressure force.

Other characteristics and advantages of the invention will appear from the detailed description that follows, with reference to the annexed drawings, in which:

- figure 1 is a partial, exploded perspective view of a cross-country ski system according to a first embodiment of the invention;
- figure 2 is a cross-sectional schematic view of the cross-country ski system according to figure 1;
- figure 3 is a perspective view of the cross-country ski alone, including lateral shoulders to carry out a second embodiment of the invention;
- figure 4 is a transverse, cross-sectional schematic view of a cross-country system incorporating a ski having a shoulder;
- figure 5 is a side schematic view of an alternative embodiment of the invention;
- figure 6 is a transverse, cross-sectional schematic view along the line VI-VI of the invention; and
- figure 7 is a schematic view of the upper surface of a ski as shown in figures 5 and 6.

Figure 1 shows a system for cross-country skiing including a ski 10, only a central zone of which is shown. A device 12 for binding a cross-country ski boot

14 is mounted on this central zone of the ski. More specifically, the binding device 12 occupies, in this central zone, a location that corresponds to at least the size of the device viewed from the top.

The binding device 12 is, for example, similar to that described in the document FR-2.739.788, which will be referred to for a detailed description. This device includes a front jaw 16 in which a front bar 18 of the boot 14 is adapted to be locked to enable a boot binding by means of articulation about the transverse axis of the bar. Indeed, this binding device 12 enables the boot heel to be lifted from the ski. The device 12 also includes longitudinally, at the rear of the jaw 16, an elastic return mechanism that includes an articulated connecting rod 20 adapted, for example, to hook a rear bar (not shown) arranged under the sole 22 of the boot 14. Finally, in the rear extension of the connecting rod, the binding device 12 also includes a guiding edge 24, the profile of which is complementary to a corresponding groove (not shown) formed under the boot sole.

According to the invention, the arrangement of the binding device 12 on the ski 10 is such that it is arranged transversally on both sides of the location for the binding device 12, of the portions of the upper surface 26 of the ski that form support surfaces 28 which corresponding support surfaces 30 of the boot sole are adapted to contact directly.

Several alternative embodiments of the invention can be envisioned.

Figures 1 and 2 show the case where the ski has an upper surface 26 that is essentially planar. In this case, the binding device 12 is arranged on a location transversally located at the center of the ski. In this case, the location of the binding 12, that is, the portion of the ski upper surface, on which the binding device 12 must be arranged, is located at the same height as the direct support lateral surfaces 28.

Figures 3 and 4 show an alternative embodiment in which the ski has, at least in its portion longitudinally located at the center, two lateral shoulders, which longitudinally extend on each side of the binding location 29, which is transversally located at the center of the ski. In this case, the upper surfaces of these shoulders advantageously form the direct support surfaces 28 in the context of the invention.

With respect to a ski having a planar upper surface, the shoulders can be made in the form of raised bosses, or they can result from a recess in the central portion of the ski, this recess thus defining the location of the ski binding device.

This embodiment allows achieving a lower position for the binding, and therefore a lower position of the boot with respect to the snow, which can favorably affect the stability of the system.

Contrary to the embodiment shown in figure 3, one can provide for the lateral edges of the ski upper surface, on which the lateral support surfaces are formed, to be arranged at a lower level than that of the binding device location. This results in a ski, the thickness of which is reduced on the lateral edges, thus reducing the height of the support surfaces with respect to the ski edges, while maintaining these support surfaces on both sides of the binding device.

In the example shown in figure 3, the difference in the level between the binding location and the two upper surfaces of the shoulders gradually varies so as to progressively disappear toward the front and rear ends of the shoulders (which therefore do not extend over the entire ski length). Conversely, for example in the case where binding location results in a recess of the ski upper surface, the function of the front and rear ends of the recess with the ski upper surface can form a step.

In both cases, one can see in figures 2 and 4 that the support surfaces of the boot sole take support directly on the lateral surfaces 28, without having an intermediary element such as a plastic element therebetween. The transmission of the user' s support forces, especially in the thrust phase, is thus made directly and is improved.

Naturally, the binding device 12 shown in the drawings is a simple example of embodiment, and the invention can be carried out with other types of binding devices adapted for the practice of cross-country skiing. One can also envision the binding device to be partly integrated into the ski, for example with an element that is articulated directly in the ski, or with part of the guiding edge integrated into the ski. However, the invention implies that, at least in the area of the support zone, the binding device is narrower than the ski. These support zones are preferably longitudinally arranged in an area corresponding to the metatarsophalangeal bending zone of the user's foot, which is the preferred zone through which the user exerts his support force at the end of the thrust, when his heel is already raised with respect to the ski.

Similarly, the examples show the case where two support surfaces are provided on both sides of the binding. However, taking into account that the supports are mostly important on the side of the ski inner edge, during the

practice of the skating step, one can provide that the ski include only one direct support lateral surface, arranged on only one side of the binding device.

Preferably, the lateral support surfaces 28 of the ski are substantially horizontal, meaning that they are substantially parallel to the lower gliding surface of the ski.

However, in the example of embodiment shown in figures 5 to 7, one can provide for the lateral support surfaces 28 to have, instead of being planar, a curvature complementary to a curvature of the lower surface 30 of the boot sole.

Similarly, as can be seen in figures 6 and 7, the lateral support surfaces 28 can be configured so that at least in the area of the support zone, the transverse width of the ski upper surface is greater than the width of the lower gliding surface of the ski through which the ski takes support on the snow. Such a construction, which results in the presence of oblique edges 32 on the ski, makes it possible to increase edging. As can be seen, the importance of the lateral offset of the support surfaces 28 can be different on each side of the ski, which can thus have a dissymmetrical section. In addition, such a concept makes it also possible to rigidify the ski in torsion.